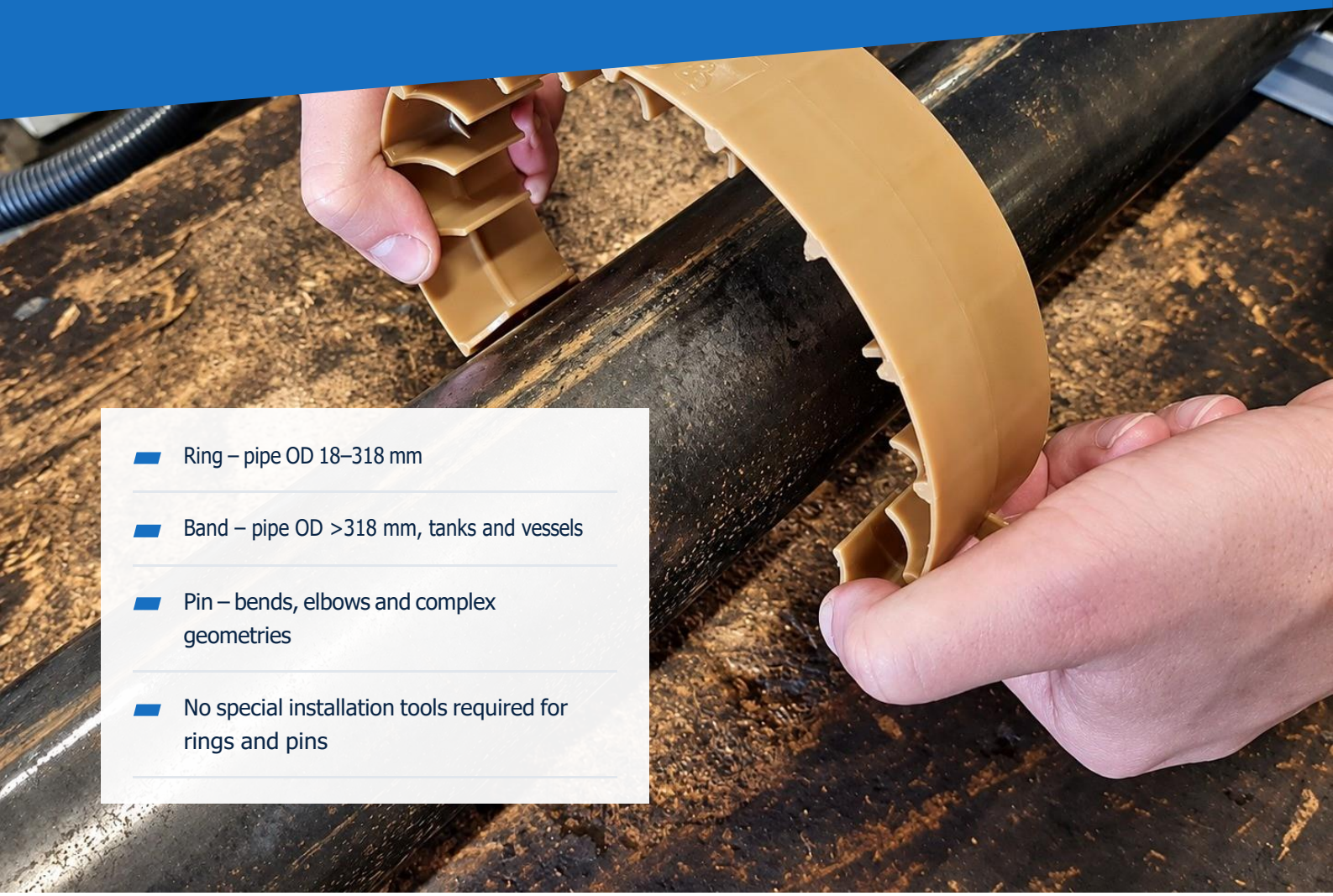
ESSGE-PLAST AB

INSTALLATION GUIDE

ESSGE NCS INSTALLATION

Recommended installation practices for ESSGE NCS Ring, Band and Pin – the non-contact insulation spacer system.



- Ring – pipe OD 18–318 mm
- Band – pipe OD >318 mm, tanks and vessels
- Pin – bends, elbows and complex geometries
- No special installation tools required for rings and pins

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ESSGE-NCS-IG-001	2.0	2026-05-08	External · English

01 SCOPE

This document describes recommended installation practices for the ESSGE NCS Ring, ESSGE NCS Band and ESSGE NCS Pin.

The document is limited to installation of the ESSGE NCS spacer system itself. It does not describe complete insulation system installation, coating application, cladding installation or inspection procedures for the surrounding insulation assembly.

PROJECT REQUIREMENTS FIRST

Project-specific requirements, insulation specifications, coating requirements and inspection procedures shall always be followed.

02 GENERAL INSTALLATION PRINCIPLES

ESSGE NCS is designed according to non-contact insulation principles intended to reduce direct contact between insulation material and coated steel surfaces.

Components are installed directly onto surfaces prepared for insulation and **shall only be installed after the surface has been approved for insulation** according to project procedures. Approval or clearance may be required from:

- Coating inspectors
- Surface treatment personnel
- Project QA/QC personnel
- Responsible site management

depending on project requirements and agreed installation sequence.

ESSGE NCS PERSONNEL OR INSTALLERS ARE NOT RESPONSIBLE FOR

- Coating application
- Coating inspection
- Surface treatment approval
- Corrosion inspection of the pipe system

Proper surface preparation, coating integrity and surface acceptance remain the responsibility of the insulation contractor and coating system owner.

DO NOT START INSTALLATION IF

Visible coating damage, corrosion, standing water, loose contamination, installation debris or other conditions that may affect coating integrity or insulation performance are present. Any such condition shall be reported and resolved according to project procedures before installation continues.

INTENDED LOAD

ESSGE NCS supports insulation and cladding loads within the insulation assembly. The system is **not** intended for:

- Structural load-bearing applications
- Personnel walkways
- Unsupported mechanical loads outside the insulation system

INSTALLATION QUALITY VERIFICATION

After installation, visually verify:

- Correct positioning of components
- Stable attachment
- Maintained stand-off distance and air-gap geometry
- No visible coating damage
- No excessive movement
- No twisting, displacement or slack

Installation quality verification shall be performed according to project-specific procedures and responsibilities.

03 ESSGE NCS RING INSTALLATION

ESSGE NCS Rings are designed for pipes with an outer diameter (OD) ranging from 18 to 318 mm.

The rings are installed directly around the pipe surface to maintain controlled separation between insulation material and the insulated surface.

INSTALLATION PROCEDURE

1. Verify correct spacer ring size according to pipe outer diameter (OD).
2. Position spacer rings according to project spacing requirements.
3. Hold the ring on both sides.
4. Pull the ring horizontally outward until the geometry forms an inverted "U"-shape.
5. Position the ring around the pipe.
6. Release the ring carefully so the ring clamps onto the pipe surface.
7. Verify stable positioning before insulation installation. The ring shall sit securely against the pipe without excessive movement.

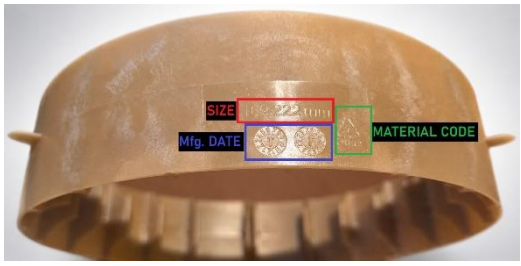


FIG. 1 Red = Size. Blue = Mfg. Date. Green = Material Code

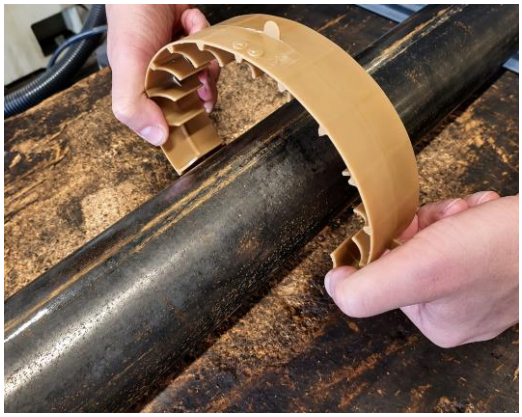


FIG. 2 Ring pulled outward into an inverted U-shape and positioned over the pipe.



FIG. 3 Installed ring with insulation fitted over it.

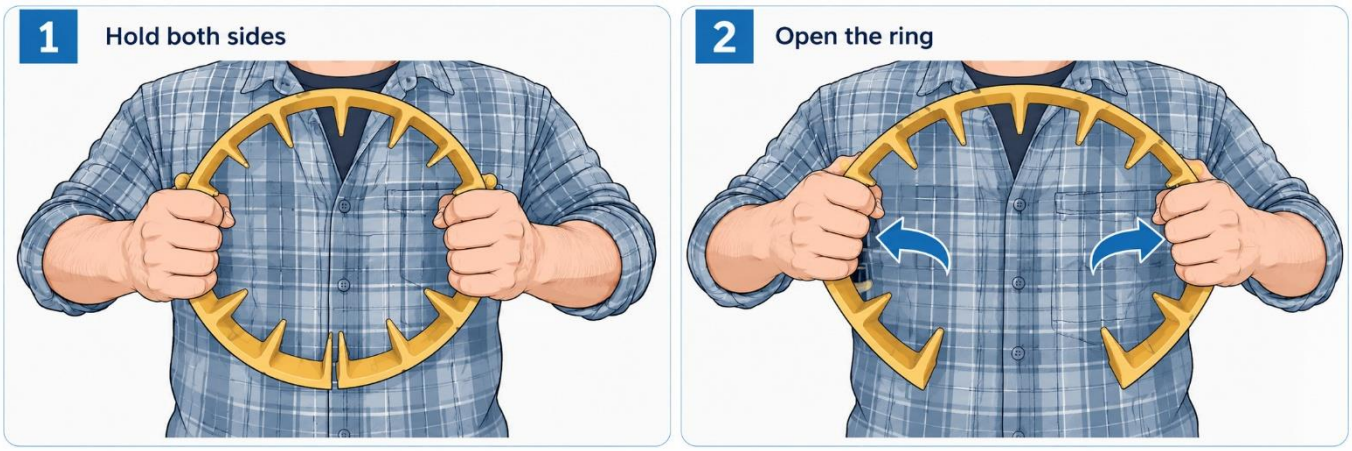


FIG. 4 Apply gentle force to open the ring wide enough to fit it around the pipe.

DURING INSTALLATION

- **Do not slide or drag the ring along the coated surface.** If repositioning is required, open the ring and reinstall it to avoid coating damage.
- Avoid twisting the ring against the pipe.
- Avoid excessive force during positioning.

The ring may be expanded during installation and does not require full circumference closure to function correctly. Coverage between approximately **75% and 100%** of the pipe circumference is sufficient to maintain the required insulation separation. **The ring opening must always face downward when installed.**

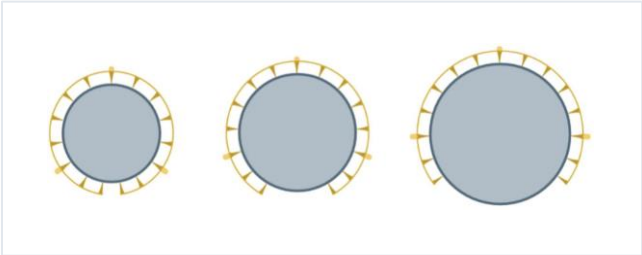


FIG.5 Accepted coverage: approx. 75–100% of the circumference

RECOMMENDED INSTALLATION SPACING

PARAMETER	REQUIREMENT
Recommended spacer quantity	3 spacers per metre
Recommended spacer distance	CC 330 mm
Additional support	4 spacers first and last metre

Project-specific insulation requirements may supersede these recommendations.

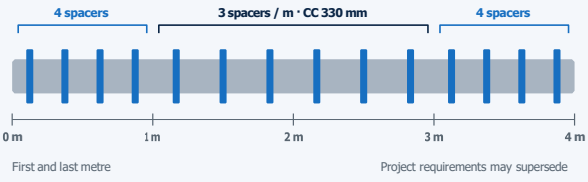


FIG. 6 Spacing along a 4 m pipe run.

04 ESSGE NCS BAND INSTALLATION

ESSGE NCS Spacer Band is intended for:

- Pipe OD exceeding 318 mm
- Tanks and vessels
- Flat insulation surfaces
- Complex insulation geometries
- Grid-based support structures

The band system is supplied in continuous lengths and cut to required dimensions during installation.

INSTALLATION PROCEDURE

1. Position the spacer band around the prepared tank or pipe surface.
2. Verify that the band sits evenly against the surface.
3. Ensure the band is not twisted, angled or rotated.
4. Tighten the band to maintain stable positioning.
5. Once the correct position is established, cut the band to the required length using suitable metal shears.
6. Overlap the band ends at the joint and fasten them mechanically using pop rivets or an equivalent approved method.
7. Verify that the band remains fixed after fastening.
8. Verify that the band is tight around the circumference with no visible slack.
9. Confirm that the joint is secure and the band cannot move under normal handling.



FIG. 7 Spacer band installed on a large-diameter pipe.

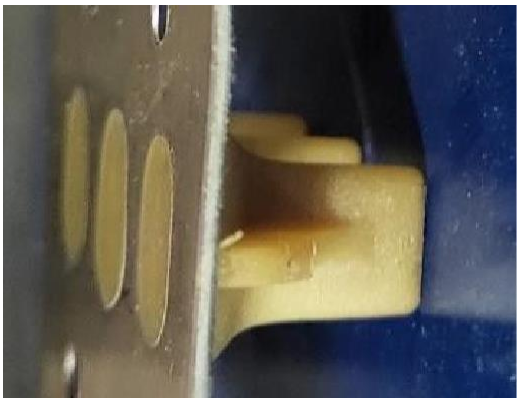


FIG. 8 Polymer foot – only polymer elements contact the coated surface.



FIG. 9 Riveted band joint.

AFTER INSTALLATION THE BAND SHALL NOT

- Loosen
- Move sideways
- Rotate
- Create slack within the assembly

WHY IT MATTERS

Any movement after installation may create friction against the coated surface and potentially damage the protective coating system. **Only polymer spacer elements shall contact the insulated surface.**

GRID-BASED CONFIGURATIONS

ESSGE NCS Spacer Band may be configured into grid structures for:

- Large flat surfaces
- Vessel insulation
- Irregular geometries
- Non-standard insulation layouts

Additional ESSGE NCS Pins may be installed where supplementary insulation support is required.

RECOMMENDED GRID SPACING

PARAMETER	MAXIMUM
Distance between bands (roof)	300 mm
Distance between main bands (roof)	1000 mm
Vertical pitch (shell)	400 mm

Project-specific requirements may supersede these recommendations.

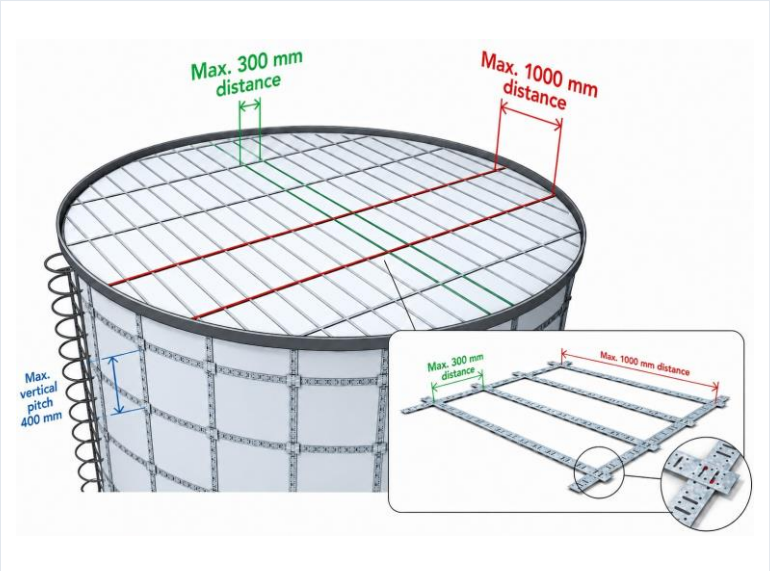


FIG. 10 Band grid on a tank shell and roof: max. 300 mm between bands, max. 1000 mm between main bands, max. vertical pitch 400 mm.



FIG. 11 · BEFORE Tank before band and insulation.



FIG. 12 · BAND Band grid and cladding sheets installed.



FIG. 13 · AFTER Mineral wool fitted over the band.

05 ESSGE NCS PIN INSTALLATION

ESSGE NCS Pins are intended for localized support and flexible stand-off control in insulation geometries where Rings or Bands may not provide sufficient adaptability.

TYPICAL APPLICATIONS

- Bends and elbows
- T-connections
- Reducers
- Flanges
- Irregular insulation sections
- Localized support areas

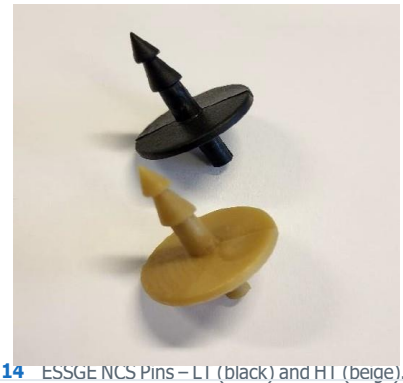


FIG. 14 ESSGE NCS Pins – LT (black) and HT (beige).

INSTALLATION PROCEDURE

1. Position the pin with the pointed section facing into the insulation material.
2. Align the pin perpendicular (90°) to the insulation surface. The pin shall be inserted straight and not at an angle.
3. Insert the pin directly into the insulation.
4. Push the pin inward until the insulation surface contacts the skirt section of the pin.
5. Verify that the leg section is oriented toward the pipe surface.
6. Verify that the pin remains stable inside the insulation and maintains the intended stand-off geometry.



FIG. 15 Pins inserted into a pipe insulation section.

SPACING

Pins are recommended to be installed in rows with a spacing of approximately **100 mm** between adjacent rows. Spacing may be adjusted where insulation geometry, material properties or project-specific requirements necessitate additional support.

GOOD TO KNOW

- Additional pins may be installed where softer insulation materials require supplementary support.
- Pins may be positioned individually according to geometry.
- No special installation tools are required.

06 PIPE BENDS & ELBOWS

For pipe bends and elbows, the use of ESSGE NCS Pins (HT or LT) is recommended. Each pin is an independent spacer unit providing localized support and controlled stand-off distance in curved sections where standard rings cannot maintain proper geometry throughout the bend.

1. Install one ESSGE NCS Ring immediately before the bend begins.
2. Install one ESSGE NCS Ring immediately after the bend ends.
3. Install ESSGE NCS Pins throughout the curved section, inserted directly into the insulation material.

For larger pipe diameters or complex geometries where rings are not suitable, ESSGE NCS Spacer Band configurations may be used to maintain structural spacing around the bend.

The pin configuration allows the insulation shell to follow the bend geometry more naturally while maintaining non-contact insulation principles across the curved section.

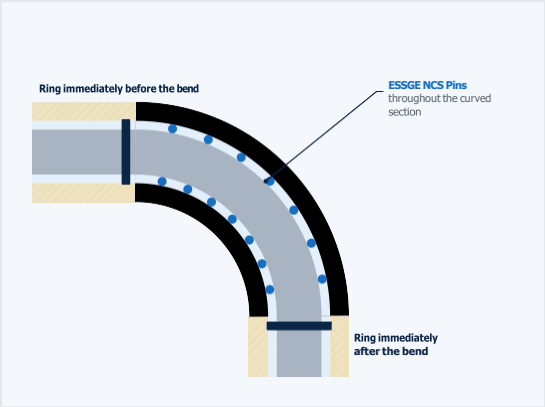


FIG. 16 Rings before and after the bend, pins throughout the curved section (schematic).

07 SYSTEM LIMITATIONS

ESSGE NCS components are intended to support insulation and cladding loads within the insulation system. The system is not intended for:

- Structural load-bearing applications
- External mechanical loads
- Personnel walkways
- Passive fire protection systems

Final insulation system design remains project-specific.

TECHNICAL SPECIFICATIONS

For dimensions, operating temperature limits, mechanical performance, acoustic performance, material properties and standards alignment, refer to **ESSGE NCS – Technical Data Sheet & Standards Alignment** (ESSGE-NCS-TDS-001).

ESSGE-PLAST AB

CONTACT

TALK TO THE ESSGE NCS TEAM

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ESSGE NCS is available through ESSGE-Plast AB and selected industrial distribution channels, including ISOPartner.

The information contained in this document is provided as general installation guidance for ESSGE NCS products. Final installation methods, insulation system design, project-specific engineering decisions and quality requirements remain the responsibility of the customer and/or installation contractor. Project-specific engineering requirements, insulation specifications, quality requirements and inspection procedures shall always take precedence over the guidance contained in this document. All installations shall be performed in accordance with applicable project requirements, site procedures and relevant industry standards.

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